HRS Scoresheets for 9/93 SIP

******* CONFIDENTIAL *******
******* PREDECISIONAL DOCUMENT *******

SUMMARY SCORESHEET
FOR COMPUTING PROJECTED HRS SCORE

SITE NAME: Hill Brothers Chemical Company

CITY, COUNTY: Phoenix, Maricopa **EVALUATOR:** J. Chester/T. Colen

EPA ID #: AZD008397242 **DATE:** Jan. 20, 1993

Lat/Long: 33°30'05"/112°08'51" **T/R/S:** T2N R2E Sec 22

THIS SCORESHEET IS FOR A: **PA** ____ **SI** ____ **LSI** ____

PA/SI Review ____ **NPL Prioritization** X **SWIFT PA** ____ **SWIFT SI** ____

Other (Specify) ____

RCRA STATUS (check all that apply):

X Generator ___ Small Quantity Generator ___ Transporter ___ TSDF

___ Not Listed in RCRA Database Date of printout: 10/16/91

STATE SUPERFUND STATUS:

___ BEP (date) ___/___ ___ WQARF Area: West Central Phoenix

___ No State Superfund Status

	S pathway	S^2 pathway
Groundwater Migration Pathway Score (S_{gw})	6.57	43.16
Surface Water Migration Pathway Score (S_{sw})	*	–
Soil Exposure Pathway Score (S_s)	*	–
Air Migration Pathway Score (S_a)	*	–
$S^2_{gw} + S^2_{sw} + S^2_s + S^2_a$		43.16
$(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4$		10.79
$\sqrt{(S^2_{gw} + S^2_{sw} + S^2_s + S^2_a)/4}$		3.28

*Pathways not assigned a score (explain):

* Pathways evaluated but not quantified — See HRS Rationale

Total population served by SRP groundwater:	142,500
Number of SRP wells within 4 miles:	248
Theoretical population served per SRP well:	575

From information obtained from SRP, there are 18 SRP wells within 4 miles of the site. A potential contamination factor value was constructed in the pathway worksheets.

6. Resources

It was assumed that nearby groundwater is used for irrigation because of the presence of numerous irrigation wells.

7. Wellhead Protection Area

None has been designated yet.

OTHER PATHWAYS

Surface Water Pathway

This pathway was evaluated but not quantified. There are no known fisheries, or recreational uses of groundwater within 15 miles downstream of the site. The nearest surface water body, the Grand Canal, is lined and bermed to prevent infiltration by runoff.

Soil Exposure Pathway

This pathway was evaluated but not quantified. The 4.2-acre site is in an industrial area, is mostly paved, and is surrounded by a fence. In addition, there are no on-site residents or sensitive environments.

Air Pathway

This pathway was evaluated but not quantified because no observed release can be projected. Although the SI report mentions accidental releases of chlorine gas or ammonia in the past, there do not appear to be inadequately contained hazardous substances on site.

tc/hbcc/hrs

HILL BROTHERS CHEMICAL COMPANY
EPA ID NO. AZD008397242

HRS RATIONALE

Groundwater Pathway

1. Observed Release

An observed release of 1,1-DCE is conservatively projected to the unconfined aquifer beneath the site. This is a conservative projection because attribution cannot be established given existing hydrogeologic data and groundwater sampling results. 1,1- DCE is known to be a breakdown product of other chlorinated solvents.

2. Toxicity Mobility

The site was evaluated for 1,1-DCE because of its presence in on-site soil gas and soil samples. Toxicity = 100; mobility = 1.0 (assumes an observed release). Projected HRS score for Toxicity/Mobility = 100

3. Hazardous Waste Quantity

Hill Brothers stores a variety of hazardous materials on site including methyl ethyl ketone, methylene chloride, PCE, 1,1,1-TCA, sulfuric acid, sodium hydroxide, anhydrous ammonia, toluene and xylene. Historically, Hill Brothers has had acid and ammonia spills on site which were remediated. Additionally, in 1985 the local Fire Departed noted leaking storage containers, however, specific information regarding the types or amounts of material spilled is unknown. In the absence of more complete information, a default waste quantity value of 10 was used.

4. Nearest Well

The SI report states that the closest drinking water well is City of Phoenix well No. 69, located approximately 0.5 miles west of the site. Figure 13 in the 1991 SRP annual report shows well No. 9.5E-7.7N is located less than 0.5 miles to the southeast. From Figure 3-11, value = 18.

5. Population Potential Contamination

Assuming conservatively that groundwater supplies up to 15% of the total water needs of approximately 950,000 people, a population per well value was estimated. The estimate assumes that each well contributes equally and that there are 248 wells in the system.

Estimated total population served:	950,000
Provided by SRP groundwater:	15%

tc/hbcc/hrs

GROUNDWATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors

	Likelihood of Release	Maximum Value	Projected Score	Rationale	Data Qual.
1.	Observed Release	550	550	1	E
2.	Potential to Release				
	2a. Containment	10			
	2b. Net Precipitation	10			
	2c. Depth to Aquifer	5			
	2d. Travel Time	35			
	2e. Potential to Release [Lines 2a x (2b+2c+2d)]	500			
3.	Likelihood of Release (Higher of lines 1 or 2e)	550	550	1	E
	Waste Characteristics				
4.	Toxicity/Mobility	a	100	2	T
5.	Hazardous Waste Quantity	a	10	3	D
6.	Waste Characteristics (lines 4 x 5, then use Table 2-7)	100	6	3	
	Targets				
7.	Nearest Well	50	18	4	H
8.	Population[d]				
	8a. Level I Concentrations	b	—		
	8b. Level II Concentrations	b	—		
	8c. Potential Contamination	b	141.4	5	E
	8d. Population (lines 8a+8b+8c)	b	141.4		
9.	Resources	5	5	6	E
10.	Wellhead Protection Area	20	—	7	H
11.	Targets (lines 7+8d+9+10)	b	164.4		
	Likelihood of Release				
12.	Aquifer Score [(Lines 3 x 6 x 11)/82,500][c]	100	6.57		

Groundwater Migration Pathway Score

13.	Pathway Score (Sgw), (highest value from line 12 for all aquifers evaluated)	100	6.57[c]

a Maximum value applies to waste characteristics category.
b Maximum value not applicable.
c Do not round to the nearest integer.
d Use additional tables.

GROUNDWATER PATHWAY CALCULATIONS

8. Population

Actual Contamination

Well Identifier	Contaminant Detected	Concentration (Note Units)	Benchmark	(A) Apportioned Population Well Serves	(B) Level* Multip.	(A x B)
				Sum (AXB) Level I		
				Sum (AXB) Level II		

* Multipliers
- Level I = 10
- Level II = 1

Potential Contamination

Distance (miles)	Total Number of Wells Within Distance Ring	Total Population Served by Wells Within Distance Ring	Distance-Weighted Population Values "Other Than Karst" (Table 3-12)* (A)
0 to 1/4			
>1/4 to 1/2	1	575	324
>1/2 to 1	1	575	167
>1 to 2	5	2875	294
>2 to 3	4	2300	212
>3 to 4	7	4025	417
	18 wells	Sum (A)	1414

Potential contamination = $\frac{\text{Sum (A)}}{10}$ = 141.4

* For drinking water wells that draw from a karst aquifer, see the Distance-Weighted Population Values for "Karst" in Table 3-12.

Source: 1991 SRP Annual Report

SRP Wells w/in 4 mi of Hills Bros Chemical Co.

	Well ID	Dist
Fig 13	8.5E - 7.5N	½ - 1
	8E - 8.5N	1-2
	7.5E - 7.5N	1-2
	8E - 6.5N	1-2
	7E - 7.8N	2-3
	6.3E - 8N	2-3
	7E - 6.8N	2-3
	10E - 11.8N	3-4
	5.5E - 8.5N	3-4
	6E - 8.3N	3-4
	6E - 6.4N	3-4
Fig 10	9.5E - 7.7N	¼ - ½
	10.5E - 7.5N	1-2
	10E - 9.3N	1-2
	11.2E - 7.7N	2-3
	13E - 8.6N	3-4
	12.5E - 10N	3-4
	10E - 11.8N	3-4

18 wells
6 wells w/ Level II contam

	¼ - ½	½ - 1	1 - 2	2 - 3	3 - 4
Tot'l			3	3	6
Level II	1*	1*	2*	1*	1*
			5	4	7